IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application : **10/500,762**

Applicant(s) : **van der BROECK et al.**

Filed : **6 July 2004**

Confirmation : **7172**

T.C./Art Unit : **2629**

Examiner : **LUI, Donna V.**

Atty. Docket : **DE-020013**

Title: **CIRCUIT ARRANGEMENT FOR THE AC POWER SUPPLY OF A PLASMA DISPLAY PANEL**

Mail Stop: **APPEAL BRIEF - PATENTS**
Commissioner for Patents
Alexandria, VA 22313-1450

APPEAL UNDER 37 CFR 41.37

Sir:

This is an appeal from the decision of the Examiner dated 19 September 2006, finally rejecting claims 1-29 of the subject application.

This paper includes (each beginning on a separate sheet):

1. **Appeal Brief;**
2. **Claims Appendix;**
3. **Evidence Appendix; and**
4. **Related Proceedings Appendix.**

APPEAL BRIEF

I. REAL PARTY IN INTEREST

The above-identified application is assigned, in its entirety, to **Koninklijke Philips Electronics N. V.**

II. RELATED APPEALS AND INTERFERENCES

Appellant is not aware of any co-pending appeal or interference that will directly affect, or be directly affected by, or have any bearing on, the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-29 are pending in the application.

Claims 1-29 stand rejected by the Examiner under 35 U.S.C. 103(a).

These rejected claims are the subject of this appeal.

IV. STATUS OF AMENDMENTS

An amendment in response to the final rejection in the Office Action of 19 September 2006 was filed on 7 November 2006 and admitted.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The invention addresses an AC voltage supply for a plasma display panel (Applicants' page 1, lines 1-2). To ignite a plasma cell, a rapid change from positive to negative voltage and vice versa is applied to the electrodes of the cell (page 1, lines 13-14). A transistor bridge (T1, T2, T3, T4 in FIGs. 1 and 3) provides this alternating voltage to the plasma cell (Cp). To conserve the energy used for each transition, a resonant circuit is used. Ideally, the energy used to provide a positive to negative voltage transition is stored in the resonant circuit and subsequently used to provide the negative to positive voltage transition, and vice versa (page 1, lines 18-21). In a conventional system (FIG. 1), this energy is stored in a capacitor Cs at each

side of the plasma cell; as current flows in a particular direction, the capacitor Cs at one side of the plasma cell is discharging while the capacitor Cs on the other side of the plasma cell is charging. The transistor bridge (T1, T2, T3, T4) controls whether the plasma cell is fired, and charging and discharging circuits (T11, T12) enable the resonant oscillation (page 3, line 34 - page 4, line 8). The transistor bridge also provides the energy to compensate for losses in the resonant circuit during each cycle; the replacement of lost energy, however, results in impulse transitions that cause electromagnetic compatibility (EMV) problems (FIG. 2; page 4, line 31 - page 5, line 11). The invention provides an alternative arrangement wherein the replacement energy is provided by auxiliary charging and discharging voltages (U1 and U2 in FIG. 3; page 5, lines 12-21). DC voltage converters provide this energy to separate capacitors (Csa and Csb) in corresponding charging and discharging circuits to assure that sufficient energy is provided in each charging and discharging cycle to avoid impulse transitions (page 6, lines 6-24; FIG. 4).

As claimed in independent claim 1, the invention comprises a circuit arrangement (FIG. 3) for an AC voltage supply of a plasma display panel, the arrangement comprising:

a transistor bridge (T1, T2, T3, T4) having a pair of voltage input nodes (node coupling T1-T3, and node coupling T2-T4) and a pair of voltage output nodes (node coupling T1-T2, and node coupling T3-T4) (page 3, lines 22-26),

an input voltage (U0) coupled to the pair of voltage input nodes (T1-T3, T2-T4) of the transistor bridge (page 3, lines 22-26),

a capacitor (Cp) of a plasma cell coupled to the pair of voltage output nodes (T1-T2, T3-T4) of the transistor bridge (page 4, lines 1-3),

a DC voltage converter (LA, TA, DA) that provides an auxiliary charging voltage (U1) from the input voltage (U0) (page 5, lines 22-26), and

a charging current circuit (Csa, T11, D1, L1) that receives the auxiliary charging voltage (U1) and provides charging current (I1) to the capacitor (Cp) (page 5, line 32 - page 6, line 3).

As claimed in independent claim 14, the invention comprises a circuit arrangement (FIG. 3) for supplying AC voltage to a plasma display panel, the arrangement comprising:

a transistor bridge (T1, T2, T3, T4) having a pair of voltage input nodes (T1-T3, T2-T4) and a pair of voltage output nodes (T1-T2, T3-T4) (page 3, lines 22-26),

an input voltage (U0) coupled to the pair of voltage input nodes (T1-T3, T2-T4) of the transistor bridge (page 3, lines 22-26),

a capacitor (Cp) of a plasma cell coupled to the pair of voltage output nodes (T1-T2, T3-T4) of the transistor bridge (page 4, lines 1-3),

a DC voltage converter (LB, TB, DB) that provides an auxiliary discharging voltage (U2) from the input voltage (U0) (page 6, lines 27-31), and

a discharging circuit (Csb, T12, D2, L2) that receives the auxiliary discharging voltage (U2) and provides discharging current (I2) to the capacitor (Cp) (page 6, lines 3-5).

As claimed in independent claim 29, the invention comprises a plasma display panel that includes a circuit arrangement for supplying AC voltage to the plasma display panel, the circuit arrangement (FIG.3) including:

a transistor bridge (T1, T2, T3, T4) having a pair of voltage input nodes (T1-T3, T2-T4) and a pair of voltage output nodes (T1-T2, T3-T4) (page 3, lines 22-26),

an input voltage (U0) coupled to the pair of voltage input nodes (T1-T3, T2-T4) of the transistor bridge (T1, T2, T3, T4) (page 3, lines 22-26),

a capacitor (Cp) of a plasma cell coupled to the pair of voltage output nodes (T1-T2, T3-T4) of the transistor bridge(T1, T2, T3, T4) (page 4, lines 1-3),

a DC voltage converter (LA, TA, DA) that provides an auxiliary charging voltage (U1) from the input voltage (U0) (page 5, lines 22-26), and

a charging circuit (Csa, T11, D1, L1) that receives the auxiliary charging voltage (U1) and provides charging current (I1) to the capacitor (Cp) (page 5, line 32 - page 6, line 3).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-2, 5-9, and 14-29 stand rejected under 35 U.S.C. 103(a) over Nagai (USP 6,011,355) and Yao et al. (USP 5,844,373, hereinafter Yao).

Claims 3-4 and 10-13 stand rejected under 35 U.S.C. 103(a) over Nagai, Yao, and Breunig et al. (USPA 2001/0023488, hereinafter Breunig).

VII. ARGUMENT

Claims 1-2, 5-9, and 14-29 stand rejected under 35 U.S.C. 103(a) over Nagai and Yao

Claims 1-2, 5-9, and 28

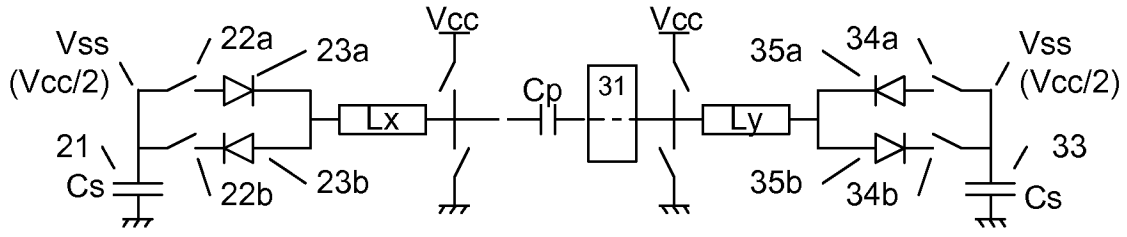
Claim 1, upon which claims 2-13 and 28 depend, claims a circuit arrangement that includes a DC voltage converter that provides an auxiliary charging voltage, and a charging current circuit that receives the auxiliary charging voltage and provides charging current to a capacitor of a plasma cell.

MPEP 2142 states:

> "To establish a *prima facie* case of obviousness … the prior art reference (or references when combined) ***must teach or suggest all the claim limitations***… If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness."

Neither Nagai nor Yao teaches or suggests a DC voltage converter that provides an auxiliary charging voltage, and a charging current circuit that receives the auxiliary charging voltage and provides charging current to a capacitor of a plasma cell.

Nagai teaches a sustain circuit for providing charging and discharging voltages to a plasma cell that is similar to conventional drivers, discussed above. Nagai's FIG. 6 can be represented as:



Nagai specifically teaches that the capacitance Cs (21 and 33) is sufficiently sized to maintain a direct current voltage of Vcc/2 throughout the charging and discharging process, based on a conventional switched oscillation between 0 and Vcc. This constant voltage of Vcc/2 is provided without the use of an auxiliary voltage.

The Office action acknowledges that "Nagai does not mention the charging circuit to receive an auxiliary voltage from a DC voltage converter so as to provide charging current to the capacitor" (Office action, page 3, lines 11-13).

Yao teaches a multiple output power supply for use in a plasma display, wherein these output voltages (50v, 180v, and 330v) is the conventional plasma sustain voltage, and the other output voltage (50v) are the conventional data select, discharge, and sustain voltages used for driving a plasma display. An intermediate voltage, 150v, is provided for forming the 330v output by adding it to the 180v output.

Yao's multiple output power supply corresponds to Nagai's multiple output power supply 102 in FIG. 4, the output 200d corresponding to the sustain voltage that is indicated as Vcc in Nagai's FIG. 6, discussed above, which the Office action equates to the claimed "input voltage". Yao does not teach a DC voltage converter that provides an auxiliary charging voltage from an input voltage for providing charging current to a capacitor of a plasma cell.

Because neither Nagai nor Yao teaches a DC voltage converter that provides an auxiliary charging voltage from an input voltage for providing charging current to a capacitor of a plasma cell, as specifically claimed in claim 1, the applicants respectfully maintain that the rejection of claims 1-2 and 5-9 under 35 U.S.C. 103(a) over Nagai and Yao is unfounded, per MPEP 2142.

Further, MPEP 2143 states:

> "THE PRIOR ART MUST SUGGEST THE DESIRABILITY OF THE CLAIMED INVENTION … The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). … The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)".

Also, the courts have consistently upheld that the claimed combination must be suggested by the prior art, rather than by the applicants' specification:

> "When prior-art references require a selective combination to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gleaned from the invention itself. Something in the prior art as a whole must *suggest* the desirability, and thus the obviousness, of making the combination. It is impermissible to use the claims as a frame and the prior-art references as a mosaic to piece together a facsimile of the claimed invention." (emphasis added) *Uniroyal Inc. v. Rudkin-Wiley Corp.,* 837 F.2d 1044, 5 U.S.P.Q.2d 1434 (Fed. Cir. 1988). "The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art *suggested* the desirability of the modification." (emphasis added) *In re Fritch*, 972 F.2d 1260, 23 U.S.P.Q.2d 1780, 1783 (Fed. Cir. 1992).

There is no suggestion in the prior art to combine Nagai and Yao in the manner suggested by the Office action. The Office action has done nothing more than paraphrase and repeat the applicants' disclosure and claims, and has not cited with particularity anything in the references that suggests a combination of the references.

The Office action asserts that "It would have been obvious… to have the charging current circuit to receive an auxiliary charging voltage… as taught by Yao to the circuit arrangement of Nagai for the purpose of generating a steady and smooth direct current voltage (Yao, column 5, lines 25-26)" (Office action, page 4, lines 3-7). The applicants respectfully disagree with this assertion. The only suggestion to add an auxiliary voltage from a DC converter for charging a plasma cell that is coupled to the outputs of a transistor bridge comes from the applicants' specification, and not from the prior art, because neither Nagai nor Yao teaches such an auxiliary voltage for charging a plasma cell.

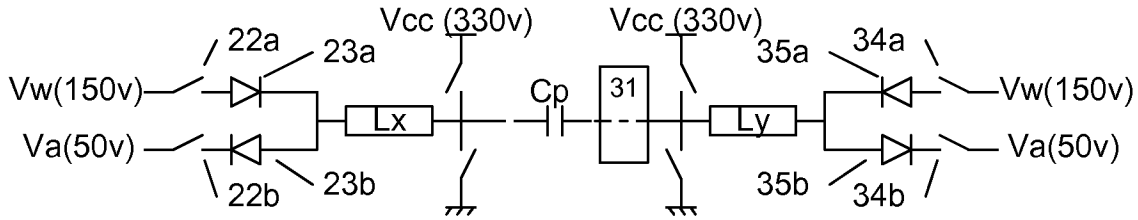
Even assuming in argument that a combination of Yao and Nagai is suggested in the prior art "for the purpose of generating a steady and smooth direct current voltage" as asserted in the Office action, the applicants respectfully maintain that this proposed combination of Yao and Nagai would not provide the applicants' claimed invention. Yao teaches providing this steady and smooth direct current voltage for powering the various components within a plasma display, such as the sustain voltage Vcc of Nagai's sustain driver, discussed above. The combination of Yao and Nagai would result in the replacement of Nagai's power supply 102 with Yao's power supply. The combination of Yao and Nagai does not teach or suggest providing a DC converter for providing an auxiliary voltage from this voltage Vcc so as to provide charging current to the plasma cell.

Because there is no suggestion in the prior art to combine Yao and Nagai as suggested in the Office action, and because one of ordinary skill in the art would not be lead to the applicants' claimed invention based on a combination of Yao and Nagai, the applicants respectfully maintain that the rejection of claims 1-2 and 5-9 under 35 U.S.C. 103(a) over Nagai and Yao is unfounded, per MPEP 2143.

Further, MPEP 2143 states:

> **"THE PROPOSED MODIFICATION CANNOT RENDER THE PRIOR ART UNSATISFACTORY FOR ITS INTENDED PURPOSE**
> If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification."

The Office action asserts that Yao's voltage Vw of Yao's FIG. 6 corresponds to the applicants' claimed auxiliary charging voltage, and states: "Yao modifies the circuit arrangement of Nagai by connecting the voltages Vw and Va respectively to the source electrode of element 22a and 22b of Nagai" (Office action, page 3, lines 19-21). This proposed combination is illustrated below:



Proposed Combination

Yao teaches that the sustain voltage of 330 v, which, applied to Nagai, corresponds to a Vcc of 330v. The applicants teach that the auxiliary voltage should be greater than the conventional Vcc/2, to provide an auxiliary charging current to the capacitance (Cp). One of ordinary skill in the art will recognize that providing a voltage (150v) that is less than Vcc/2 (330/2 = 165v) exacerbates the electromagnetic interference (EMI) problem that is addressed by the applicants' invention. At each cycle, a transition pulse of 15v (Vcc/2 - 150v) more than the pulses produced by conventional devices will be produced. As such, one of ordinary skill in the art would not be motivated to implement the combination proposed by the Office action, because such a combination will substantially increase the device's EMI compatibility problems, likely to the point of rendering the device unsuitable for FCC approval of the device for public use.

Because the proposed combination of Yao and Nagai would substantially degrade Nagai's device's EMI compatibility, the applicants respectfully maintain that the suggested combination of Yao and Nagai would render the combination unsuitable for public use, thus rendering it unsuitable for its intended purpose. Therefore, the applicants respectfully maintain that the rejection of claims 1-2 and 5-9 under 35 U.S.C. 103(a) over Nagai and Yao is unfounded, per MPEP 2143.

Claims 14-27

Claim 14, upon which claims 15-27 depend, claims a circuit arrangement for supplying AC voltage to a plasma display panel that includes a DC voltage converter that provides an auxiliary discharging voltage from an input voltage, and a discharging circuit that receives the auxiliary discharging voltage and provides discharging current to a capacitor of a plasma cell.

As noted above, but with regard to a discharging circuit:

neither Yao nor Nagai teaches or suggests a DC voltage converter that provides an auxiliary discharging voltage from an input voltage, and a discharging circuit that receives the auxiliary discharging voltage and provides discharging current to a capacitor of a plasma cell;

there is no suggestion in the prior art to combine Nagai and Yao as suggested by the Office action; and

the combination of Yao and Nagai does not teach or suggest a DC voltage converter that provides an auxiliary discharging voltage from an input voltage, and a discharging circuit that receives the auxiliary discharging voltage and provides discharging current to a capacitor of a plasma cell.

Further, with regard to EMI compatibility, the proposed combination asserts that the auxiliary discharge voltage is Yao's voltage Va of 50 volts. As taught by the applicants, the auxiliary voltage is below Vcc/2 (165 v.) by an amount that compensates for the losses in the resonant circuit, to reduce the EMI effects caused by transitions at each cycle to reach a full 0-Vcc and Vcc-0 swing when the discharge voltage is at Vcc/2. The Office action proposes that the auxiliary voltage is 115 volts below the conventional Vcc/2 (165v). The applicants respectfully maintain that such a large transition at each discharge cycle will substantially increase the device's EMI compatibility problems, likely to the point of rendering the device unsuitable for FCC approval of the device for public use.

Because neither Nagai nor Yao teaches a DC voltage converter that provides an auxiliary charging voltage from an input voltage for providing charging current to a capacitor of a plasma cell, as specifically claimed in claim 1, the applicants respectfully maintain that the rejection of claims 14-27 under 35 U.S.C. 103(a) over Nagai and Yao is unfounded, per MPEP 2142.

Because there is no suggestion in the prior art to combine Yao and Nagai as suggested in the Office action, and because one of ordinary skill in the art would not be lead to the applicants' claimed invention based on a combination of Yao and

Nagai, the applicants respectfully maintain that the rejection of claims 14-27 under 35 U.S.C. 103(a) over Nagai and Yao is unfounded, per MPEP 2143.

Because the proposed combination of Yao and Nagai would substantially degrade Nagai's device's EMI compatibility, the applicants respectfully maintain that the suggested combination of Yao and Nagai would render the combination unsuitable for public use, thus rendering it unsuitable for its intended purpose. Therefore, the applicants respectfully maintain that the rejection of claims 14-27 under 35 U.S.C. 103(a) over Nagai and Yao is unfounded, per MPEP 2143.

Claim 29

Claim 29 claims a plasma display panel that includes a DC voltage converter that provides an auxiliary charging voltage from an input voltage, and a charging circuit that receives the auxiliary charging voltage and provides charging current to a capacitor of a plasma cell.

As noted above:

neither Yao nor Nagai teaches or suggests a DC voltage converter that provides an auxiliary charging voltage from an input voltage, and a charging circuit that receives the auxiliary charging voltage and provides charging current to a capacitor of a plasma cell;

there is no suggestion in the prior art to combine Nagai and Yao as suggested by the Office action;

the combination of Yao and Nagai does not teach or suggest a DC voltage converter that provides an auxiliary charging voltage from an input voltage, and a charging circuit that receives the auxiliary charging voltage and provides discharging current to a capacitor of a plasma cell; and

the proposed combination of Yao and Nagai would substantially degrade Nagai's device's EMI compatibility.

Because neither Nagai nor Yao teaches a DC voltage converter that provides an auxiliary charging voltage from an input voltage for providing charging current to a capacitor of a plasma cell, as specifically claimed in claim 1, the applicants

respectfully maintain that the rejection of claim 29 under 35 U.S.C. 103(a) over Nagai and Yao is unfounded, per MPEP 2142.

Because there is no suggestion in the prior art to combine Yao and Nagai as suggested in the Office action, and because one of ordinary skill in the art would not be lead to the applicants' claimed invention based on a combination of Yao and Nagai, the applicants respectfully maintain that the rejection of claim 29 under 35 U.S.C. 103(a) over Nagai and Yao is unfounded, per MPEP 2143.

Because the proposed combination of Yao and Nagai would substantially degrade Nagai's device's EMI compatibility, the applicants respectfully maintain that the suggested combination of Yao and Nagai would render the combination unsuitable for public use, thus rendering it unsuitable for its intended purpose. Therefore, the applicants respectfully maintain that the rejection of claim 29 under 35 U.S.C. 103(a) over Nagai and Yao is unfounded, per MPEP 2143.

Claims 3-4 and 10-13 stand rejected under 35 U.S.C. 103(a) over Nagai, Yao, and Breunig

Claims 3-4 and 10-13

Claims 3-4 and 10-13 are dependent upon claim 1. In this rejection, the Office action relies upon the combination of Nagai and Yao for teaching the elements of claim 1.

As noted above, the combination of Nagai and Yao fails to teach or suggest the elements of claim 1. As such, the applicants respectfully maintain that the rejection of claims 3-4 and 10-23 under 35 U.S.C. 103(a) that relies upon Nagai and Yao for teaching the elements of claim 1 is unfounded, per MPEP 2142.

CONCLUSIONS

Because there is no suggestion to combine Nagai and Yao as suggested in the Office action, and because neither Nagai nor Yao teaches or suggests a DC voltage converter that provides an auxiliary charging or discharging voltage from an input voltage for providing charging current to a capacitor of a plasma cell, the applicants respectfully request that the Examiner's rejection of claims 1-29 under 35 U.S.C. 103(a) be reversed by the Board, and the claims be allowed to pass to issue.

Respectfully submitted

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CLAIMS APPENDIX

1. A circuit arrangement for an AC voltage supply of a plasma display panel, the arrangement comprising:

a transistor bridge having a pair of voltage input nodes and a pair of voltage output nodes,

an input voltage coupled to the pair of voltage input nodes of the transistor bridge,

a capacitor of a plasma cell coupled to the pair of voltage output nodes of the transistor bridge,

a DC voltage converter that provides an auxiliary charging voltage from the input voltage, and

a charging current circuit that receives the auxiliary charging voltage and provides charging current to the capacitor.

2. The circuit arrangement of claim 1, wherein the DC voltage converter is a boost converter.

3. The circuit arrangement of claim 2, wherein the boost converter comprises a supply transistor, a supply diode and a supply inductor.

4. The circuit arrangement of claim 3, wherein

the DC voltage converter provides the auxiliary charging voltage to a charging capacitor, and an auxiliary discharging voltage to a discharge capacitor, and

the inductor and diode are arranged in series between the charging capacitor and discharging capacitor.

5. The circuit arrangement of claim 1, wherein the auxiliary charging voltage is greater than half the input voltage.

6. The circuit arrangement of claim 1, wherein the charging current circuit includes a series combination of a charging transistor, a charging diode and a charging inductor.

7. The circuit arrangement of claim 1, wherein the auxiliary charging voltage is applied to an auxiliary capacitor.

8. The circuit arrangement of claim 7, wherein a capacitance of the auxiliary capacitor is much larger than a capacitance of the capacitor of the plasma cell.

9. The circuit arrangement of claim 1, wherein the DC voltage converter provides an auxiliary discharging voltage, and the auxiliary charging voltage is generated from the auxiliary discharging voltage.

10. The circuit arrangement of claim 3, wherein the supply transistor shares a first connection point with an auxiliary charging capacitance that stores the auxiliary voltage and a ground terminal of the input voltage, and a second connection point shared with the supply inductor and an anode of the supply diode.
11. The circuit arrangement of claim 10, wherein a cathode of the supply diode has a connection point shared with a charging transistor of the charging current circuit and the auxiliary charging capacitor.

12. The circuit arrangement of claim 10, wherein the supply inductor is connected at least to a discharging transistor of a discharging current circuit.

13. The circuit arrangement of claim 3, wherein the auxiliary charging voltage is greater than half the input voltage.

14. A circuit arrangement for supplying AC voltage to a plasma display panel, the arrangement comprising:

a transistor bridge having a pair of voltage input nodes and a pair of voltage output nodes,

an input voltage coupled to the pair of voltage input nodes of the transistor bridge,

a capacitor of a plasma cell coupled to the pair of voltage output nodes of the transistor bridge,

a DC voltage converter that provides an auxiliary discharging voltage from the input voltage, and

a discharging circuit that receives the auxiliary discharging voltage and provides discharging current to the capacitor.

15. The circuit arrangement of claim 14, wherein the DC voltage converter is a buck converter.

16. The circuit arrangement of claim 15, wherein the buck converter comprises a supply transistor, a supply diode and a supply inductor.

17. The circuit arrangement of claim 15, wherein the buck converter is connected to a positive side of the input voltage, a negative side of the input voltage, and toan auxiliary discharge capacitor that stores the discharge voltage.

18. The circuit arrangement of claim 14, wherein the auxiliary discharging voltage is less than half the input voltage.

19. The circuit arrangement of claim 14, wherein the discharging circuit includes a series combination of a discharging transistor, a discharging diode and a discharging inductor.

20. The circuit arrangement of claim 14, wherein the auxiliary discharging voltage is applied to an auxiliary discharging capacitor.

21. The circuit arrangement of claim 20, wherein a capacitance of the auxiliary discharging capacitor is significantly greater than a capacitance of the plasma cell.

22. The circuit arrangement of claim 14, wherein the auxiliary discharging voltage is generated from a discharge of the capacitor of the plasma cell and stabilized by the DC voltage converter.

23. The circuit arrangement of claim 22, wherein the DC voltage converter compensates for losses caused by commutation and takes power from the input voltage.

24. The circuit arrangement of claim 16, wherein the supply transistor shares a first common connection point witha positive side of the input voltage and shares a common connection point with the supply inductor and an anode of the supply diode.

25. The circuit arrangement of claim 16, wherein the supply inductor is connected to a discharging transistor of the discharging circuit.

26. The circuit arrangement of claim 25, wherein the supply inductor is connected at least to a charging transistor of a charging circuit.

27. The circuit arrangement of claim 21, whereinthe auxiliary discharging voltage is less than half the input voltage.

28. The circuit arrangement of claim 1, wherein the DC voltage converter provides an auxiliary discharging voltage from the input voltage, and the auxiliary charging and discharging voltages are used for a plurality of independent bridge circuits that are coupled to the input voltage.

29. A plasma display panel comprising a circuit arrangement for supplying AC voltage to the plasma display panel, the circuit arrangement including:

a transistor bridge having a pair of voltage input nodes and a pair of voltage output nodes,

an input voltage coupled to the pair of voltage input nodes of the transistor bridge,

a capacitor of a plasma cell coupled to the pair of voltage output nodes of the transistor bridge,

a DC voltage converter that provides an auxiliary charging voltage from the input voltage, and

a charging circuit that receives the auxiliary charging voltage and provides charging current to the capacitor.

EVIDENCE APPENDIX

No evidence has been submitted that is relied upon by the appellant in this appeal.

RELATED PROCEEDINGS APPENDIX

Appellant is not aware of any co-pending appeal or interference which will directly affect or be directly affected by or have any bearing on the Board's decision in the pending appeal.